

WHAT IS CLAIMED IS:

1. A photothermographic material containing a photosensitive silver halide, a non-photosensitive silver salt of an organic acid, a reducing agent for silver ions and a binder on one surface of a support, wherein the material contains at least one compound satisfying at least one of (i) to (iv) below and an organic gold compound, and the photosensitive silver halide has a mean grain size of 0.12  $\mu\text{m}$  or less:

(i) a compound producing imagewise a chemical species that can form development initiation points on and in the vicinity of the non-photosensitive silver salt of an organic acid (except for hydrazine derivatives);

(ii) a compound that provides increase of developed silver grain density to a level of 200-5000% when it is added in an amount of 0.01 mol/mol of silver (except for hydrazine derivatives);

(iii) a compound that provides increase of covering power to a level of 120-1000% when it is added in an amount of 0.01 mol/mol of silver (except for hydrazine derivatives);

(iv) a compound represented by any one of the following formulas (1) to (3):

Formula (1)



wherein, in the formula,  $\text{R}^1$ ,  $\text{R}^2$  and  $\text{R}^3$  each independently represents a hydrogen atom or a substituent, Z represents an electron-withdrawing group, and  $\text{R}^1$  and Z,  $\text{R}^2$  and  $\text{R}^3$ ,  $\text{R}^1$  and  $\text{R}^2$ , or  $\text{R}^3$  and Z may be combined with each other to form a ring structure,

Formula (2)



wherein, in the formula, R<sup>4</sup> represents a substituent,

Formula (3)



wherein, in the formula, X and Y each independently represent a hydrogen atom or a substituent, A and B each independently represents an alkoxy group, an alkylthio group, an alkylamino group, an aryloxy group, an arylthio group, an anilino group, a heterocyclyloxy group, a heterocyclylthio group or a heterocyclylamino group, and X and Y or A and B may be combined with each other to form a ring structure.

2. The photothermographic material according to Claim 1, which contains at least one compound of (i).

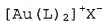
3. The photothermographic material according to Claim 1, which contains at least one compound of (ii).

4. The photothermographic material according to Claim 1, which contains at least one compound of (iii).

5. The photothermographic material according to Claim 1, which contains at least one compound of (iv).

6. The photothermographic material according to Claim 1, wherein the organic gold compound consists of at least one compound represented by the following formula (4):

Formula (4)



wherein L represents a ligand, two of L may be identical to or different from each other, at least one of L represents a mesoion

ligand, and  $X^-$  represents an anion.

7. The photothermographic material according to Claim 1,  
wherein the organic gold compound consists of at least one  
5 compound represented by the following formula (5):

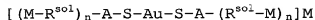
Formula (5)



10 wherein L represents an organic mercapto ligand and M represents  
a cationic counter ion, provided that this complex has a  
symmetrical form.

8. The photothermographic material according to Claim 1,  
15 wherein the organic gold compound consists of at least one  
compound represented by the following formula (6):

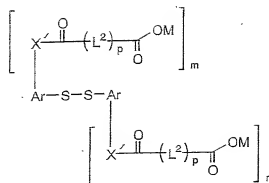
Formula (6)



20 wherein M represents a cationic counter ion,  $R^{sol}$  represents a  
hydrophilic group, A represents a substituted or unsubstituted  
divalent organic bridging group, n represents any of 1-4; and  
when n is 2 or larger, n of  $(R^{sol}-M)$  may be identical to or different  
25 from each other or one another, provided that the compound has  
a symmetrical form.

9. The photothermographic material according to Claim 1,  
wherein the photosensitive silver halide consists of at least  
30 one compound represented by the following formula (7):

Formula (7)



wherein, in the formula, X' each independently represents -O-, -NH- or -NR-, R represents an alkyl group, a fluoroalkyl group, an aryl group or a sulfonyl group, m and r each represent 0, 1 or 2, provided that m and r do not simultaneously represent 0, M represents hydrogen or a cationic species, Ar represents an aromatic group, L<sup>2</sup> represents a bridging group, p represents 0 or 1, and (m + r) of X', M, L<sup>2</sup> or p as well as two of Ar may be identical to or different from each other or one another.

10. An image formation method comprising subjecting the photothermographic material according to Claim 1 to light exposure for 10<sup>-6</sup> second or less and heat development to form an image.

11. An image formation method comprising subjecting the photothermographic material according to Claim 1 to light exposure utilizing a multi-beam heat development apparatus provided with two or more laser heads and heat development to form an image.

12. An image formation method comprising subjecting the photothermographic material according to Claim 1 to light exposure and heat development at a line speed of 140 cm/minute or more to form an image.